

Invited Lecture

2026年7月11日(土) 11:20 ~ 11:45 | 第1会場 (Conference Hall A)

[IL3] Invited Lecture 3 (III-IL3)**Clinical trial of iPS cell-derived cardiomyocyte spheroid transplantation to severe heart failure patients due to ischemic heart disease**

Chair: Makoto Nakazawa (Former Chairperson, JSPCCS)

Chair: Hiroyuki Yamagishi (Tokyo Metropolitan Children's Medical Center)

[III-IL3-1] Clinical trial of iPS cell-derived cardiomyocyte spheroid transplantation to severe heart failure patients due to ischemic heart disease

○ Keiichi Fukuda (Heartseed inc., Keio University)

We induced differentiation of ventricular-specific cardiomyocytes from allogeneic iPS cells, selected them to high-purified cardiomyocytes by metabolic selection, and prepared micro-myocardial tissue masses (cardiomyocyte spheroids). We conducted a clinical trial (LAPiS trial) in which these were transplanted into the left ventricle of 10 patients with severe heart failure due to ischemic heart disease by open heart surgery in conjunction with CABG. The cells were transplanted into five patients as low-dose group (50 million cells) and five patients as high-dose group (150 million cells), and safety and efficacy were evaluated. Regarding safety, no tumorigenicity was observed, and although a short period of accelerated idioventricular rhythm was observed in several cases about two weeks after transplantation, so-called fatal sustained ventricular tachycardia was not observed. We report the 1-year clinical progress of five low-dose patients and data up to 6 months for three high-dose patients. Improvement in local myocardial contractility was observed at the site of cardiomyocyte transplantation. Cardiac function improved in four of the five low-dose patients, but worsened in one due to worsening mitral regurgitation. Improvement in cardiac function was more pronounced in the three high-dose patients.